DOCUMENT RESUME

ED 450 648 HE 033 824

AUTHOR	Norfles, Nicole
TITLE	Closing the Divide: Technology Use in TRIO Upward Bound Projects.
INSTITUTION	National TRIO Clearinghouse, Washington, DC.; Center for the Study of Opportunity in Higher Education, Washington, DC.
SPONS AGENCY	Department of Education, Washington, DC.
PUB DATE	2001-02-00
NOTE	36p.
AVAILABLE FROM	For full text: http://www.trioprograms.org/clearinghouse.
PUB TYPE	Numerical/Quantitative Data (110) -- Reports - Evaluative (142) -- Tests/Questionnaires (160)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*College Preparation; *Computer Uses in Education; Disadvantaged Youth; *Educational Technology; *High School Students; High Schools; Higher Education; Internet; Student Surveys
IDENTIFIERS	Access to Computers; *TRIO Programs; *Upward Bound

ABSTRACT

This report is the first report from the National TRIO Clearinghouse on the topic of TRIO programs and technology. The focus is on the use of technology, particularly computer-based technology, by Upward Bound (UB) students and the role that UB projects play in providing access to that technology. UB is an intensive college preparatory support program that is designed to provide low-income, first-generation high school students with motivation and the essential skills to complete high school and earn a college degree. Seventy-seven percent of the 698 currently funded UB programs participated in the study. The study found that 73% of UB students have access to computers and the Internet at school, but fewer than 9% have access to computers and the Internet in their regular classrooms. Only 30% of UB projects incorporate technology into their instructional programs. Most UB projects have a computer to student ratio of 1:10, and only 1 program in 4 has laptop computers available for students to borrow. Twenty-five percent of UB projects have no computers available for student use, and 38% of projects do not provide students with e-mail access. Resource limitations are the primary reason that UB projects do not provide greater access to technology for their students. Many project staff members, however, indicate a need for the most basic types of computer training. Some recommendations are made for improved technology use in TRIO projects. The study survey is included. (Contains 7 figures, 18 tables, and 21 references.) (SLD)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 450 648

Closing the Divide: Technology Use In TRIO Upward Bound Projects

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Nicole Norfles
National TRIO Clearinghouse
and the
Center for the Study of Opportunity in Higher Education

A publication of the National TRIO Clearinghouse
Funded through a grant from the U.S. Department of Education
February 2001

HE033824

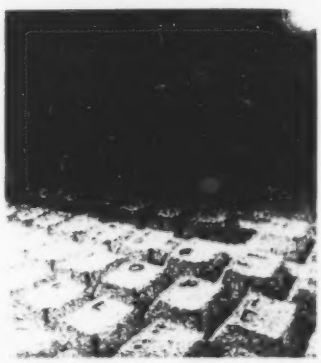
BEST COPY AVAILABLE

Closing the Divide: Technology Use in TRIO Upward Bound Projects is the first report from the National TRIO Clearinghouse on the topic of TRIO programs and technology. The initial funding to conduct a technology survey of all TRIO programs (Upward Bound, Talent Search, Educational Opportunity Centers, Student Support Services, and McNair) was provided by the U.S. Department of Education TRIO Division.

The National TRIO Clearinghouse collects and disseminates information, applied program materials, resources, and research related to TRIO and other educational opportunity programs and their students. The National TRIO Clearinghouse is an adjunct Educational Resources Information Center (ERIC) Clearinghouse on Educational Opportunity affiliated with the ERIC Higher Education Clearinghouse. The Clearinghouse serves as a resource to inform practice in TRIO and other educational opportunity programs, and the research community. The Clearinghouse, funded by a grant from the United States Department of Education TRIO Division, provides reference services and referrals; publications; forums and symposia; presentations and original research. The National TRIO Clearinghouse World Wide Web Home Page can be located at www.trioprograms.org/clearinghouse/.

Suggested Citation

National TRIO Clearinghouse. *Closing the Divide: Technology Among TRIO Upward Bound Projects,* prepared by Nicole Norfles for the National TRIO Clearinghouse of the Council for Opportunity in Education, Washington, DC 20001.



Contact:
Andrea Reeve
National TRIO Clearinghouse
1025 Vermont Avenue, NW
Suite 900
Washington, DC 20005
Phone: (202) 347-7430
Fax: (202) 347-0786
Email: atreeve@hqcoe.org

Closing the Divide: Technology Use In TRIO Upward Bound Projects

Nicole Norfles
National TRIO Clearinghouse
and the
Center for the Study of Opportunity in Higher Education

Acknowledgments

Many individuals contributed to this study and report. The author thanks the U.S. Department of Education TRIO Division under the leadership of Dr. Robert Belle for providing the initial funding for this study. The author also gratefully acknowledges the important contributions of the Council for Opportunity in Education staff who conceptualized and provided guidance for the study, and edited the report on numerous occasions: Andrea Reeve, Director of Educational Opportunity Clearinghouses and Maureen Hoyler, Executive Vice President. They also provided the model for the "Examining the Possibilities" section and contributed to the "Recommendations" section. Mario Brossard, Vice-President and Managing Director of InterSurvey assisted in the study and survey design and provided the initial data analysis. Many individuals reviewed the report and provided invaluable comments: Lana Muraskin and Tom Mortenson, Senior Scholars in the Center for the Study of Opportunity in Higher Education; Jamie Merisotis, President of the Institute for Higher Education Policy and members of the National TRIO Clearinghouse Advisory Committee.

TABLE OF CONTENTS

List of Tables 4

List of Figures 4

Executive Summary 5

Introduction 7

- Methodology 7
- Who Does Upward Bound Serve? 8

Access of Upward Bound Students to Technology 9

Examining the Possibilities 10

The Current Reality in Upward Bound 12

- Use of Computer Technology in Instruction 12
- Upward Bound Math/Science 17

Administrative Use of Technology 20

Upward Bound Technology Needs 21

Conclusions and Recommendations 23

Notes 25

References 26

Appendix A- Upward Bound Technology Survey 27

LIST OF TABLES

Table 1: Percentages of Responding Projects with Their Characteristics 8

Table 2: Percentage of Projects and the Amount of Technology Used for Instructional Purposes 12

Table 3: Percentage of UB Projects that Offer Specific Computing Courses 13

Table 4: Percentage of UB Projects that Integrate Computer Technology into Course Content 13

Table 5: UB Projects Use of Technological Tools and Computer Software for Instructional Purposes 14

Table 6: Percentage of UB Projects with Desktop PC's Exclusively for Student Use 14

Table 7: Ratio of Student Use PCs to Students in All UB Projects 15

Table 8: MHz Speed of UB Projects with Computers for Student Use 16

Table 9: UB Projects with Laptops Exclusively for Student Use and Access by Location 16

Table 10: Percentage of UB Projects with Someone Managing Technology Oversight 17

Table 11: Comparison of Computer Access of Math/Science Projects to All UB Projects 17

Table 12: Comparison of Technology Offered In Math/Science Projects and All UB Projects 18

Table 13: Comparison of Math/Science and UB Projects Ratio of Student Use PC's to Students 19

Table 14: Comparison of Math/Science and All UB Student Use PC's MHz Speed 19

Table 15: Percentage of All UB Projects with Administrative Desktop PC's 20

Table 16: MHz Speed of All UB Projects with Administrative Use PC's 20

Table 17: Funding Priotities for Technology Upgrades 21

Table 18: Most Requested Staff Training Needs in All UB Projects (by Percent) 22

LIST OF FIGURES

Figure 1: Comparison of Students Nationally and Students in Upward Bound Projects with Computer and Internet Access in Schools 9

Figure 2: Comparison of Students Nationally and Students in Upward Bound Projects with Computer and Internet Access in Classrooms 9

Figure 3: Regularity of UB Projects Technology Use for Instructional Purposes 12

Figure 4: Ratio of Student Use PC's to Students in All UB Projects 15

Figure 5: Comparison Between Math/Science and All UB Projects Percentage of PC's Exclusively for Student Use 18

Figure 6: Bar Chart of UB Projects Most Requested Training by Location 22

Figure 7: Pie Chart of All UB Projects Technology Funds Needed 22

EXECUTIVE SUMMARY

Closing the Divide: Technology Use in TRIO Upward Bound Projects is the first report from the National TRIO Clearinghouse on the topic of TRIO programs and technology. The National TRIO Clearinghouse conducted this study to assess the use of technology[1], particularly computer-based technology, by Upward Bound (UB) students and the role that Upward Bound projects play in providing access to that technology.

Upward Bound is an intensive college preparatory support program established in 1964 and designed to provide low-income, first-generation high school students with motivation and the essential skills to complete high school and earn a college degree. More than eighty percent of Upward Bound participants are from families that are both low-income and first-generation. Seventy-seven percent of the 698 currently funded Upward Bound programs participated in the study.

The study found that:

- 73% of Upward Bound students have access to computers and the Internet in the schools they attend; however, less than nine percent of Upward Bound students have access to computers and the Internet in their regular school class rooms. Nationally, nine percent of secondary students have access to computers and the Internet in their schools, while 51% of classrooms have such access.

- Only 30% of Upward Bound projects incorporate technology into their instructional program all or most of the time. In general, Upward Bound Math/Science projects do not incorporate technology into instruction more often than do traditional Upward Bound programs.

- Most Upward Bound projects have a computer to student ratio of 1:10. Only one program in four has laptop computers available for students to borrow.

- 25% of Upward Bound projects have no computers available for student use; 38% of projects do not provide students with e-mail access.

- Resource limitations are the primary reason that Upward Bound projects do not provide greater access to technology for their students. Projects have definite plans to respond to technology needs when resources are made available, particularly: purchasing laptop computers for student use (73%), purchasing additional instructional software (65%), and providing more training for staff (63%). Many project staff members indicate a need for the most basic types of computer training.

The report concludes with a set of recommendations:

TRIO Projects should re-examine the delivery of academic-year and summer services to better integrate technology throughout the instructional program and in all student activities.

The U.S. Department of Education should support TRIO projects through resources and training opportunities that will assure operationalization of technology goals, including improved use of existing equipment.

The National TRIO Clearinghouse should provide and support technological efforts of Upward Bound Projects by disseminating research and best practices and continuing its program of research in the area of technology access and use.

The Council for Opportunity in Education and regional and state TRIO associations should actively invest association resources in eliminating disparities in knowledge with respect to technology for all members.

Corporations should establish partnerships with local Upward Bound projects.

Congress should provide resources and legislative oversight in eliminating disparities in access to technology for Upward Bound students.

INTRODUCTION

The National TRIO Clearinghouse has conducted a quantitative study in order to assess the computer-based technology[2] presently available to Upward Bound students, and the role that Upward Bound projects are playing in providing access. This report describes the study findings. Upward Bound is a federally funded program established in 1964 as a pre-college postsecondary outreach program of the War on Poverty. What began in 1965 with a six million dollar authorization serving 3,200 students, is now a $220 million dollar program serving 53,000 students at over 650 colleges[3]. Throughout its 35 years, however, the legislative purpose of Upward Bound has remained constant. The purpose is to provide low-income students with the **skills and motivation necessary for success in education beyond secondary school**[4].

Upward Bound is an intensive college preparatory support program designed to provide low-income, first-generation high school students with encouragement and the essential skills to complete high school and earn a postsecondary degree. The goal of Upward Bound is to increase postsecondary enrollment and graduation rates of participants. Upward Bound provides academic and enrichment activities throughout the calendar year. Other services provided include study skill development; academic, financial, and personal counseling; tutoring; cultural and social activities; information about postsecondary education opportunities and college visits, assistance with college entrance and financial aid applications; and preparation for college entrance exams. The Upward Bound Math Science program is designed to strengthen high school students' math and science skills and encourages students to pursue postsecondary degrees in math and science. Services include intensive summer math and science experiences, counseling and advising, computer instruction, and research activities[5].

In 1964, familiarity with technology and its myriad applications was not one of those skills necessary for success in postsecondary education. Today few would question that students must utilize technology to be competitive at the postsecondary level and in the work environment. Moreover, as the Department of Commerce's report Falling Through the Net: Defining the Digital Divide points out, there are wide disparities by income in access and use of technologies[6]. The authors of the Upward Bound technology study sought to determine the extent to which Upward Bound had met the new challenge of incorporating technology into its instructional offerings and administrative framework.

Methodology

The National TRIO Clearinghouse conducted this study in order to assess the level of access to technology presently available to Upward Bound students and the role that Upward Bound projects play in providing this access. To gather the data, questionnaires were distributed to all 698 Upward Bound programs funded in the 1998-99 academic year, utilizing a blast-fax distribution methodology[7]. Respondents were given a fax number to return completed questionnaires and a mailing address if preferred. More than 80 percent of completed questionnaires were returned by fax.

The initial wave of questionnaires was faxed the week of October 25, 1999. After receiving only a 40 percent return, the Clearinghouse embarked upon an extensive telephone follow-up process to increase the response rate and reliability of the resulting data. Initial telephone calls were made to the 418 Upward Bound programs that had not responded, followed by three additional phone calls to all non-respondents. On March 30, 2000, the final set of completed surveys was received. A total of 537 completed questionnaires were received with a cumulative response rate of 77 percent. Table 1 includes further characteristics of the programs that responded.

Of the programs responding, 45 of a potential 124 (36%) were specifically designated as Upward Bound Math and Science Centers. Differences between Math/Science Centers and traditional Upward Bound programs are discussed later in the report. Also included among respondents were 28 of a potential 45 (62%) Veterans Upward Bound programs.

Who Does Upward Bound Serve?

To describe the Upward Bound clientele, the May 1997 Interim Report of the National Evaluation of Upward Bound provides the most recent profile[8]. It shows that eighty percent (80%) of Upward Bound students are from families that are both low-income and first-generation. Low-income is defined by the Upward Bound legislation as a taxable family income below 150 percent of the poverty level. First-generation, also defined by the legislation, means that neither a natural or adoptive parent has earned a baccalaureate degree. In addition, the legislation requires that Upward Bound students, except in unusual cases, are at least 13 years of age but no older than 19. According to the National Evaluation, approximately 70 percent of Upward Bound students are female, with 30 percent male. Fifty-three percent (53%) of students are African American; 20 percent Hispanic, 20 percent are white, and approximately seven percent Asian or Native American. The National Evaluation found that entering Upward Bound students are typically C+ students, but that they generally have higher educational expectations than other students from low socio-economic backgrounds. The study also found that Upward Bound participants have parents who tend to be more involved in their children's educational activities than other low-income parents.

Table 1: Percentages of Responding Projects with Their Characteristics

Characteristic:	Number of Projects	Percentage of Total Received
Less Than 50 Students	19	4%
50 to 100 Students	410	76
101 to 150 Students	76	14
151 to 200 Students	8	2
200 to 300 Students	5	1
Over 300 Students	14	3
Unsure how to classify	5	1
Program Located in Urban Setting	244	45
Program Located in Suburban Setting	65	12
Program Located in Rural Setting	208	39
Unsure how to classify	20	4
Program Affiliated with a 2-Year Institution	162	30
Program Affiliated with a 4-Year Institution	344	64
Program Not Affiliated with an Institution	13	3
Unsure how to classify	18	3
Program Affiliated with a Public Institution	392	73
Program Affiliated with a Private Institution	120	22
Program Not Affiliated with an Institution	13	2
Unsure how to classify	12	2

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

Figure 1:
Comparison of Students Nationally and Students in Upward Bound Projects with Computer and Internet Access in Classrooms

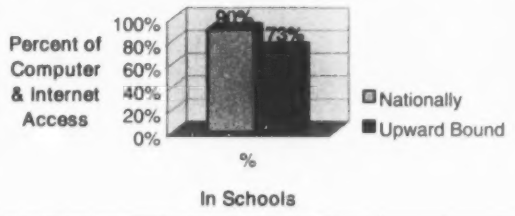
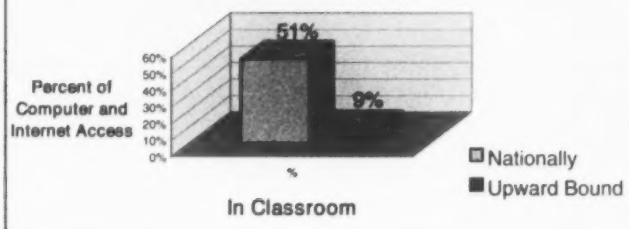


Figure 2:
Comparison of Students Nationally and Students in Upward Bound Projects with Computer and Internet Access in Classrooms



ACCESS OF UPWARD BOUND STUDENTS TO TECHNOLOGY

As a first step in examining the extent of access to technology of Upward Bound students, the study sought information regarding students' access through their schools, homes and communities.

At School

Using data from the U.S. Department of Education, "Schools and Staffing Survey", we find that schools attended by Upward Bound students lag behind the nation with respect to access to computers and the Internet. Just over 7 in 10 Upward Bound students (73%) currently have access to computers and the Internet in their schools (Figure 1). In comparison, the U.S. Department of Education reports that 90 percent of American students are attending schools with computers and Internet access[9]. Schools attended by Upward Bound students lag even farther behind in bringing computers and Internet access to the individual classroom level (Figure 2). Only nine percent of classrooms in schools attended by Upward Bound students have computers and Internet access while nationally, 51 percent of all public school classrooms have such access[10].

Within Upward Bound, students in programs located in rural areas are less likely (15%) to have access to computers and technology at their schools than students participating in Upward Bound Projects in urban (23%) or suburban (25%) locations.

At Home

Upward Bound students also appear to be less likely than other low-income and minority students to have access to computers at home. From studies of the National Center for Education Statistics (NCES), we find that about 18 percent of secondary school students with family incomes below $15,000 have computers at home, but Upward Bound directors do not report similar access.[11] Upward Bound Directors report that 85 percent of Upward Bound participants do not have access to computers in their home (See Table 9 on page 16). Similarly, NCES notes that 21 percent of Black, non-Hispanic students, 22 percent of Hispanic students, and 61 percent of White students have computers at home.[12] Again, Upward Bound directors report that UB student have a very low rate (4 %) of access to computers at home.

The limited access of most Upward Bound students to technology in their schools and homes creates a bleak picture, and prompts the question: "Are Upward Bound projects doing all they can to ameliorate the differences in technological access for Upward Bound students?"

EXAMINING THE POSSIBILITIES

In creating a picture of how computer use could be implemented in Upward Bound, an innovative idea of a model Upward Bound project is provided. Picture a model Upward Bound project, call it Upward Bound Academy, that utilizes a comprehensive and carefully developed strategy to integrate technology into the delivery of services. The Academy takes advantage of a learning environment where technology is integrated across the curriculum. Instructors and staff provide models for using technology as a tool for learning; for gaining access to information; for making connections with other students locally and internationally; and for reconstructing knowledge. The Upward Bound Academy requires staff to constantly rethink how they deliver learning to students. Hardware and software alone will never replace the need for instructors to use sound instructional design in curriculum and learning activities. Additionally, incorporation of technology increases, not decreases, opportunities for collaborative learning experiences for students that also benefit projects. The scope of curriculum offerings is limitless with a broader program of offerings at various levels of math, science, and languages all becoming possibilities.

This model Upward Bound Academy uses technology in practically every aspect of service delivery. During the school year, counselors carry laptop computers to target schools and utilize them to provide academic, personal and career counseling. At these sessions students regularly make "virtual visits" to colleges or universities on-line. The counselor coaches the student on ways to use these visits to determine the admissions requirements for a given college. He or she then uses this information as a springboard to academic advising. In addition, working with local Talent Search and GEAR-UP projects, the Upward Bound Academy has arranged to keep three computer laboratories in target schools open Monday through Saturday from 2 p.m. through 8 p.m. Academic offerings, including tutoring and workshops take place in classrooms adjoining the labs. Students routinely use the computer labs to work on homework or group projects when they have no Upward Bound activity scheduled. The Academy also has several laptops available for students who need to use them at home during times the laboratories are not available.

During the academic year, the UB Academy also collaborates with the school district, host institutions and other TRIO projects to offer advanced placement courses to students at schools that do not offer a full range of AP courses.

Each Upward Bound classroom is equipped with a computer and modem so it can connect to the Internet. Teachers integrate examples from the Internet into their presentations and students and teachers use presentation software, such as PowerPoint, in presenting projects. Each classroom also has several other computers so that Internet research and data analysis using database programs and spreadsheets can be integrated into the regular instructional program.

School and Upward Bound combine to use technology in innovative ways. Academy students take Advanced Placement (AP) courses on-line in mathematics and American history as well as other subject areas. During the summer program, the UB Academy uses technology to broaden its curricula as well as to individualize it as appropriate in the various disciplines. In math, several Upward Bound projects collaborate and share curriculum and instructors through the use of web-based video conferencing. The calculus and advanced math instructor provides live lectures at one site and is viewed live on the computer by students at other Upward Bound projects. Students complete exercises on the computer and receive immediate feedback. Because the lecture is also recorded, students may later view sections relevant to completion of homework. Students also have a monitored chat room where they discuss problems and work cooperatively on assignments.

Math instructors utilize a variety of interactive software and CD ROM's designed to assist high school students to learn math. Finally, math teachers find helpful tips for planning lessons online and/or participate in live chat rooms that focus on innovative ways to teach math with other instructors.

In Physics, UB Academy students attend one in-classroom lecture and activity each week, and view another lecture using web-based video. The instructor has more time to schedule small tutorials with students. Virtual labs are built into the lecture sequence and students receive immediate feedback on the outcomes of experiments. Because these are virtual experiments and are web-based, experiments aren't limited by physical and resource limitations. Students can drop objects from the top of the Empire State Building and calculate speed and impact. Similar to the calculus environment, students view sections of lectures related to problems assigned for homework and can discuss laboratory exercises with other students through group meetings and web chat rooms. In this classroom, students have an option to use e-textbooks that have links to interactive activities, vocabulary, and problems. Students also use the computers to complete course learning assessments.

In a lab, often used for writing instruction, the computers are networked. When the teacher types a question, students react simultaneously in writing. Teachers use this method to encourage creativity and gather ideas and comments from all students. The process can be used for peer editing and is not limited to an English class. All disciplines use the writing classroom to integrate writing across the curriculum. Students also correspond with students across the world and teachers work with teachers nationally and internationally to share curriculum and teach each other's students. On-line interaction through web-based chat rooms, email, electronic bulletin boards, and discussion lists create new opportunities for group communication.

At the UB Academy, students use multi-media when they are presenting information learned in classes. Building on the ThinkQuest structure promoted by the U.S. Department of Education TRIO Division, students create web pages, hyper-card programs, and incorporate video and audio into their presentations. In this way, students both demonstrate what they have learned and share this information beyond their classrooms with students internationally, using a community page, a bulletin board, and chat rooms.

Thanks to the World Wide Web, Upward Bound instructors also find interactive web sites that focus on hundreds of different languages. For example, in a Spanish oriented web site, students chat with other Spanish-speaking teenagers and/or download interactive language software.

Project staff communicate regularly with students by email, providing feedback on project requirements and student accomplishments. For projects that have multi-sites, UB Academy has weekly instructional and tutorial sessions using teleconferencing. The student government holds meetings and leadership activities in that same teleconferencing classroom. And, all students are loaned a laptop computer when they join the UB Academy so they can do homework, communicate with staff and students, and share the technology with their families.

The Upward Bound Academy, working through the TRIO state association, also uses technology to facilitate placing students in college and tracking their progress once enrolled. Each fall, the state association creates a database of all students graduating. Funded by the state higher education authority, the database which includes directory information for each student as well as the institutions to which they are applying and their desired major, if known, is sent to each Student Support Service project and other state and institutionally funded educational opportunity programs.

Every institution should have the capacity to run a model Upward Bound Academy like this, but most do not. Though it unknown exactly how many students have these types of opportunities, there are, however, opportunities offered by the U.S. Department of Education through Computer Technology Centers, ThinkQuest, and other programs like the Preparing Tomorrow's Teachers to Use Technology (PTTT) Program.

BEST COPY AVAILABLE

THE CURRENT REALITY IN UPWARD BOUND

The current reality in Upward Bound differs considerably from the possibilities presented with the Model Upward Bound Academy: Most UB projects do not have the resources to teach AP courses. Only 30 percent of projects have incorporated technology into their instructional programs all or most of the time. Most projects have a computer to student ratio of one to ten. Most projects believe that all Upward Bound staff members need training and technical assistance with regards to technology. However some projects are working creatively with existing resources to provide technology access.

In a Northeastern Upward Bound project, students not only received instruction on how to search the Internet for colleges, applications and financial aid, but they also had extensive instructional assignments within the host institutions computer labs. Though the project had only three or four computers, the Director arranged for students to use the university's computer lab for maximum saturation of technology skill development for all student participants. A computer specialist who is also a secondary school teacher, instructs the class, which is separated according to students grade level. Students are taught mathematics through data collection and spreadsheets, and they learn how to conduct web searches, to assess the quality of search engines, to determine the difference between a reliable source and "stuff", and how to prepare PowerPoint presentations. The Director has also arranged for this talented instructor to provide information to other program professionals whenever possible.

Use of Computer Technology in Instruction

Significant differences among projects emerge in the frequency in which they utilize technology for instructional purposes. Overall, about one-third of projects (30%) use technology for instructional purposes either "all" or "most" of the time, more than 6 in 10 programs (62%) do so "some" of the time, and just over 1 in 20 programs (6%) use technology "rarely" or "never." Over a third (36%) of the larger projects (those that serve more than 100 students) use technology for instructional purposes "all" or "most" of the time, while only 3 in ten (29%) smaller projects (those that serve fewer than 100 students) say the same (Table 2). This may be in part due to the larger budgets that larger projects have. [A typical project serving 125 students would have a budget of $470,000, where the overall budget of a project serving 50 students would be $220,000.] Given the economy of scale, the financial difference affects computer purchasing capacity.

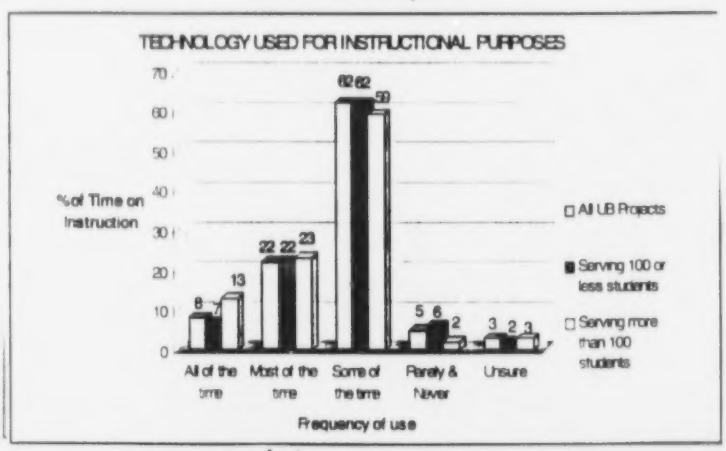
Table 2: Percentage of Programs and the Amount of Technology Used for Instructional Purposes

Amount of Technology Used	All Projects	100 or Less Students Served	More than 100 Students Served
All of the time	8%	7%	13%
Most of the time	22	22	23
Some of the time	62	62	59
Rarely & Never	5	6	2
Unsure	3	2	3
Total	100	99*	100

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

*Total not equal to 100 due to rounding.

Figure 3: Regularity of UB Programs Technology Use for Instructional Purposes



BEST COPY AVAILABLE

Table 3: Percentage of UB Projects that Offer Specific Computing Courses

	Total All Projects w/ Computers	100 or Less Students Served	More than 100 Students Served	Urban	Suburban	Rural	2-Year Inst.	4-year Inst.
Yes	75%	72%	85%	78%	74%	73%	70%	78%
No	56	5	14	21	23	26	26	21
Unsure	2	2	1	2	3	1	4	1

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

It is encouraging that 92 percent of projects have at least some integration of computers and technology into their course content (Figure 3). Three-quarters (75%) are offering students specific instruction on computing and using emerging technologies (Table 3). As Table 3 details, larger programs, suburban programs, and programs affiliated with 4-year institutions are the most likely to offer students specific courses on computing.

The likelihood of a project integrating technology into course content does not appear to vary based upon location. Eighty-eight percent (88%) of suburban projects, 83 percent of urban projects, and 89 percent of rural projects report integrating technology into course content. Projects affiliated with two-year institutions (86%) are as likely as projects affiliated with four-year institutions (87%) to integrate technology into course content.

Table 4: Percentage of UB Projects that Integrate Computer Technology into Course Content

Integrate into Course Content	Total All Projects w/ Computers	Urban	Suburban	Rural	2-Year Inst.	4-year Inst.
Yes	86%	83%	88%	89%	86%	87%
No	12	15	8	11	11	12
Unsure	2	2	5	-	4	1

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

Utilization of these technology tools for instructional purposes, in most cases, is directly related to the level of sophistication of the Upward Bound project's computers. This concept is elaborated in the study at a later point. In general, the faster a project's PC's are, the more likely the project is to use the range of technology tools—both hardware and software-related—for instruction. These programs are also more likely than other programs to use word processing software, spreadsheet programs, desktop publishing software, database programs and web page creation software.

Student Access to the Internet

While the majority of Upward Bound projects (86%) provide access to the Internet for their students, one Upward Bound project in eight (13%) does not provide such access (See Table 12 on page 18). Overall, 38 percent of Upward Bound projects do not provide access to e-mail for their students.

Twenty-five percent (25%) of Upward Bound projects do not have any desktop personal computers primarily dedicated for student academic use (Table 6). A quarter of all projects (23%) have only between one and three desktop PCs primarily for student academic use, and 17 percent currently have between four and seven computers primarily for students. Larger Upward Bound projects (those that serve more than 100 students), as well as the programs that frequently use technology for instruction, tend to have more desktop PCs for student academic use than smaller programs (those that serve fewer than 100 students) and those that do not use technology for instruction as frequently.

BEST COPY AVAILABLE

Table 5: UB Projects Use of Technological Tools and Computer Software for Instructional Purposes

Use of Tools & Software	Total All Projects w/ Computers	100 or Less Students Served	More than 100 Students Served	Urban	Suburban	Rural	2-Yr Inst.	4-Yr. Inst.
Word Processing Software	94%	94%	97%	95%	92%	95%	93%	95%
Internet	87	86	89	86	92	87	86	88
E-Mail	72	71	80	72	75	73	67	76
Desktop Publishing	69	68	75	68	66	71	68	71
Presentation Software (PPT)	66	64	71	65	68	66	61	68
Spreadsheets	60	56	74	62	57	57	56	51
Database Software	51	48	62	49	52	52	52	50
Web Page Creation	47	45	53	46	41	50	39	51
Video-conferencing	15	12	23	14	11	16	14	16
Down-linking of Satellites	13	12	17	10	12	14	12	13
Virtual Courses	6	5	10	8	8	4	5	7
Course Conferencing	3	3	5	2	2	4	3	3

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

Table 6: Percentage of UB Projects with Desktop PC's Exclusively for Student Use

Number of Desktop PC's	Total UB Program	100 or Less Students Served	More than 100 Students Served
None	25%	28%	15%
1 to 3	23	26	13
4 to 7	17	15	22
8 to 10	7	6	12
11 to 20	15	14	21
More than 20	11	10	17
Unsure	2	1	--
Total	100	100	100

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

Student Access to Computers

Perhaps an even more telling figure is the approximate ratio of students in a project to the number of student-use computers. Almost half of all projects (48%) have less than one computer per ten students. According to the survey, 17 percent of Upward Bound programs have a 1:10 ratio, 9 percent have a 1:15 ratio, 7 percent have a ratio of 1:20, and 14 percent have a ratio lower that 1:20. Only one Upward Bound project in four (23%) enjoys a ratio of one computer to every three students or better.

As mentioned earlier, the survey also sought to determine the extent that Upward Bound project technological equipment and software were up to date by asking respondents about computer processing speed. Overall, Upward Bound computer equipment inventories are sub-par at best, especially when considering the availability and recent steep price decline of high performance PCs. Surprisingly, 4 in 10 projects (40%) do not have even one computer with a megahertz speed of 300 MHz that is dedicated to student use[13]. Only 14 percent of programs have an entire computer inventory that could be considered state-of-the-art, with all computers running over 300 MHz (See Table 8 on page 16).

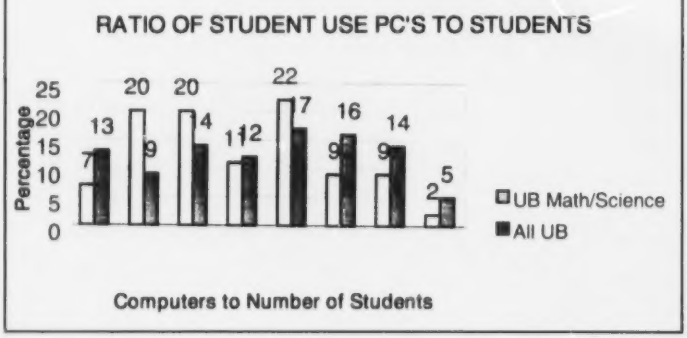
Table 7: Ratio of Student Use PCs to Students in All UB Projects

PC to Student Ratio	All UB
0 Student use PC's	13%
1:1	9
1:3	14
1:5	12
1:10	17
1:20	16
More than 1:20	14
Unsure	5
Total	100

Source: National TRIO Clearinghouse
Upward Bound Technology Survey, 2000

Again, Projects whose PC's all have a megahertz speed of better than 300 are more likely than programs who have no PC's with this level of speed, to use the Internet, e-mail, virtual courses and down-linking of satellite sites for instructional purposes. The quality of computers available relates to budget. Among the projects with no desktops running at 300 MHz, 82 percent of programs are serving fewer than 100 students.

Figure 4: Ratio of Student Use PC's to Students in All UB Projects



Providing Laptops to Students

Limited resources also prevent Upward Bound projects from utilizing an obvious approach to compensate for students' lack of access to computers in their homes. More than three-quarters of Upward Bound projects (77%) do not have laptop computers that students can borrow and use on their own. Students need time to explore and experiment with software, the Internet, and email. Home use can provide these opportunities and expose students' families to computers. This is as true among large projects as it is among small ones, among projects affiliated with 4-year institutions as well as 2-year institutions, and among projects tied to public universities and those affiliated with private colleges (See Table 9 on page 16).

Overall, only 1 in 4 (23%) of all the Upward Bound projects nationwide provide access to laptops for their students. Suburban projects (34%) are the most likely to provide this access and urban projects (18%) are the least likely. Even among the 23 percent of projects that provide students access to laptops, two-thirds (64%) have fewer than four laptop computers for student use. Eighteen percent of projects with computers available for loan report having between four and seven laptops available. As previously noted, 73 percent of projects indicated that any additional technology resources would go towards the purchase of laptop computers for student use.

A majority of projects (52%) currently have no staff dedicated to overseeing their use of technology for academic purposes. This is especially true for programs serving 100 or fewer students and for programs affiliated with 2-year higher education institutions. Fifty-four percent of programs serving 100 or fewer students have no one managing technology for academic purposes, compared to only 40 percent of programs who serve more than 100 students. Almost 6 in 10 programs affiliated with 2-year institutions (59%) have no one dedicated to technology usage for academic purposes, compared to fewer than half (48%) of those affiliated with 4-year institutions. There is no difference on this measure between programs affiliated with either a public or private institution.

BEST COPY AVAILABLE

Table 8: MHz Speed of UB Projects with Computers for Student Use

Computers for Student Use MHz Speed	Upward Bound % Saturation
None with more than 300 MHz	40%
All more than 300 MHz	14
1-7 computer with more than 300 MHz	20
8 or more with more than 300 MHz	11
Unsure	16
None with less than 100 MHz	60%
At least 1 with less than 100 MHz	23
Unsure	17

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

Many projects (43%) that have a member of their staff dedicated to overseeing technology for academic purposes report that this person spends less than 10 percent of his or her time on this responsibility. Three programs in ten (29%) say this staff member spends between 10 and 25 percent of his or her time managing the use of technology.

Access for most projects to the Internet is provided through the educational institution with which they are affiliated. Only 4 percent of programs arrange for their Internet connections privately, while 3 percent of programs have arranged for Internet access by some other means. Unfortunately, one-third of survey respondents (29%) are unsure of the type of connection most of their project's personal computers have to the Internet. Thirty-one percent of UB project directors indicate that they have a T1 (institutional) connection to the Internet, while 17 percent report connecting to the Internet through a 56K modem, and others use similarly adequate combinations. Another 8 percent connect with 28.8 bps modems or other similarly less adequate modem connections.

Table 9: UB Projects with Laptops Exclusively for Student Use and Access by Location

LAPTOPS	Total	URBAN	SUBURBAN	RURAL
None	77%	82%	68%	74%
1 to 3	15	14	18	15
4 to 7	4	2	5	7
8 or More	4	2	9	3

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000.

This information is particularly relevant given that the data suggests that there is a relationship between the sophistication of a project's technological infrastructure and a project's reliance on technology for instruction. For example, among programs that "rarely" or "never" use technology for academic instruction, only 16 percent have a T1 connection. Indeed, more than 4 in 10 projects (42%) that "rarely" or "never" use technology for instruction do not know the type of connection to the Internet their project uses (See Table 2 on page 12).

A quarter (23%) of all the Upward Bound projects that use technology for instructional purposes "some of the time" have no desktop PCs devoted exclusively for student academic use. And a majority (52%) of projects when asked if they use technology for instruction replied "rarely" or "never" have no desktops for students.

Table 10: Percentage of UB Projects with Someone Managing Technology Oversight

Technology Oversight	All UB	100 or Less Students Served	More than 100 Students Served	Urban	Suburban	Rural	2-Yr.	4-Yr
Academically								
Yes	47%	45%	49%	51%	43%	44%	41%	52%
No	52	55	51	48	57	55	58	48
Unsure	1	-	-	1	-	1	1	-
Administrative								
Yes	58%	56%	65%	62%	53%	56%	53%	60%
No	41	42	35	38	42	43	45	39
Unsure	1	2	-	-	5	1	2	1

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

Upward Bound Math/Science

One might assume that, because of its nature and purpose, Upward Bound Math/Science Projects would be providing students access to computers and technology at a higher rate than other Upward Bound projects. This does not appear to be the case. Survey results show that on a whole range of measures, Upward Bound Math/Science projects do not have a better technological infrastructure than other programs. Nor are they able to offer students greater access to technology than traditional Upward Bound programs.

Examining factors outside the control of individual Upward Bound projects, it appears that Upward Bound Math/Science students access to computers and technology is similar to students enrolled in traditional Upward Bound projects. More than one in five (22%) Upward Bound Math/Science projects surveyed indicate that their students do not have access to computers in their schools, and fewer than 1 in 20 (4%) projects say that most of their students have access in their homes (See Table 11). These figures are statistically the same as the results among all Upward Bound projects surveyed. Fortunately, there are fewer Upward Bound Math/Science students who are denied access to technology in their communities. It may be that the Upward Bound Math/Science projects focus more on helping their students to locate community technology resources because many of the Math/Science projects include students from a multi-state region. They may not have students on their campuses during the academic year.

Table 11: Comparison of Computer Access of Math/Science Projects to All UB Programs

Computer Access	UB Math/Science	All UB
School access	73%	73%
No school access	22	20
Unsure	5	7
Home Access	4%	4%
No home access	76	85
Unsure	20	12
% with computer and Internet in school	73%	73%
% with computer and Internet in classroom	6	9

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

BEST COPY AVAILABLE

Table 12: Comparison of Technology Offered In Math/Science Projects and All UB Projects

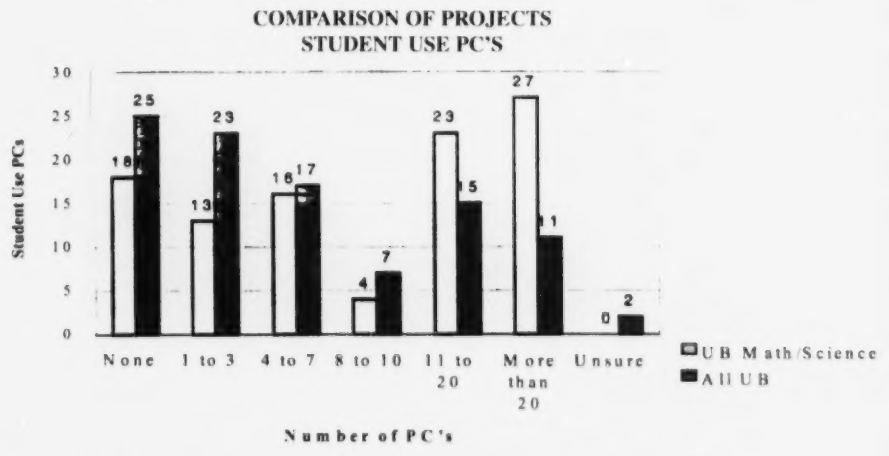
Technology Offered	Math/Science	All UB
Internet access	89%	86%
No Internet access	11	13
Unsure	-	1
E-mail access	71%	60%
No E-mail access	27	38
Unsure	2	2
Laptop access	33%	23%
No laptop access	64	77
Unsure	2	--

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000.

Eighty-nine percent (89%) of Upward Bound Math/Science projects offer access to the Internet for their students, but one program in ten (11%) does not (Table 12). Additionally, more than a quarter (27%) of all Upward Bound Math/Science projects do not offer access to e-mail, a figure that is only slightly lower than Upward Bound projects as a whole.

Since nearly one in five (18%) Upward Bound Math/Science projects report having no desktop PCs dedicated to student academic use, Math/Science projects find themselves in a position similar to other Upward Bound projects.

Figure 5: Comparison Between Math/Science and All UB Projects Percentage of PC's Exclusively for Student Use



Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

The availability of student-use computers in a project, on average, is greater for Upward Bound Math/Science projects than Upward Bound projects as a whole. Although only about one-third (35%) of all Upward Bound projects enjoy a ratio of one computer for every five students or better, more than half of all Math/Science projects (51%) have such a ratio. Indeed, 20 percent of all Upward Bound Math/Science projects have a computer available for every student (See Table 13 on page 19).

BEST COPY AVAILABLE

Table 13: Comparison of Math/Science and UB Projects Ratio of Student Use PC's to Students

PC to Student Ratio	UB Math & Science	All UB Programs
0 Student use PC's	7%	13%
1:1	20	9
1:3	20	14
1:5	11	12
1:10	22	17
1:20	9	16
More than 1:20	9	14
Unsure	2	5
Total	100	100

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000.

However, Upward Bound Math/Science projects are also limited by the age and speed of their computers. Almost three in ten (29%) Upward Bound Math/Science projects do not have even one computer dedicated to students with a megahertz speed of more than 300. Fewer than 1 in 10 (9%) Math/Science projects have a state of the art computer inventory with all of their computers running faster than 300 MHz. Sixteen percent (16%) of Upward Bound Math/Science projects have at least one desktop with a megahertz speed below 100. Almost a third (29%) of the Math/Science projects surveyed were unsure about the megahertz speeds of the desktop computers used by their project.

Table 14: Comparison of Math/Science and All UB Student Use PC's MHz Speed

Student Use PC MHz Speed	UB Math & Science	All UB Programs
None with more than 300 MHz	29%	40%
All more than 300 MHz	9	14
1-7 computer with more than 300 MHz	24	20
8 or more with more than 300 MHz	11	11
Unsure	27	16
None with less than 100 MHz	56	60
At least 1 with less than 100 MHz	16	23
Unsure	30	17

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000.

ADMINISTRATIVE USE OF TECHNOLOGY

Most projects have between one and three desktop PCs (47%) or between four and seven desktop PCs (43%) for administrative use. However, 17 percent of Upward Bound projects report having no desktop PCs for administrative use.

Table 15: Percentage of All UB Projects with Administrative Desktop PC's

Number of Desktop PC's	All Projects	100 or Less Students Served	More than 100 Students Served
None	1%	1%	2%
1 to 3	47	52	23
4 to 7	43	40	53
8 or more	7	5	19
Unsure	2	2	2
Total	100	100	100

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

Upward Bound project PCs used for administrative purposes are generally faster than the PCs used primarily for student academic purposes. Twenty-one percent (21%) indicate that all of their PCs for administrative use run at speeds of more than 300 MHz, while a third (32%) have between 1 and 3 administrative use PCs running at these speeds. Two-thirds of projects (68%) have no computers running at speeds below 100 MHz.

Table 16: MHz Speed of All UB Programs with Administrative Use PC's

Administrative Use PC MHz Speed	All UB
None with more than 300 MHz	21%
All more than 300 MHz	21
1-7 computer with more than 300 MHz	41
8 or more with more than 300 MHz	3
Unsure	14
None with less than 100 MHz	68%
At least 1 with less than 100 MHz	17
Unsure	15

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

Three-quarters of projects (75%) use their administrative computers for financial accounting purposes. Among these projects, a majority (57%) use a financial accounting software program provided by the academic institution with which their project is affiliated. Almost all projects (95%) responding to the survey also indicate that they use administrative computers to maintain a student database. More than 9 in 10 indicate using e-mail (94%) and the Internet (92%) for administrative purposes.

A majority of projects (58%) currently have a staff member dedicated to overseeing the use of technology for administrative purposes (See Table 10 on page 17). Forty-one percent (41%) of projects — including 42 percent of projects that serve 100 students or less and 35 percent of projects serving 100 students or more—report having no one specifically dedicated to overseeing technology use for administrative purposes. Within the projects with a dedicated staff member, most identify the director (23%) as the person with this responsibility. Almost three-quarters of projects (75%) indicate that the individual who manages technology for administrative purposes spends up to 25 percent of his or her time on this function.

BEST COPY AVAILABLE

UPWARD BOUND TECHNOLOGY NEEDS

Most Upward Bound projects have an excellent idea about what they need to do to better serve students. Indeed, most projects are able to delineate top-tier needs from second-tier needs. Purchasing laptop computers for student use (73%), purchasing additional PCs for student use (70%), purchasing additional instructional software (65%) and providing more training for staff (63%) are top-tier needs for the majority of projects. A majority of projects (53%) would also hire a part- or full-time staff member dedicated to overseeing technology use by the project.

Table 17: Funding Priorities for Technology Upgrades

Focus of Priority Upgrades	Total	100 or Less Students Served	More than 100 Students Served	Urban	Suburban	Rural
Purchase more student-use laptop computers	73	75%	63%	70	74	77
Purchase more student-use PCs	70	72	63	73	72	67
Purchase instructional software	65	65	65	69	68	60
Provide more staff training in technology use	63	63	66	67	69	60
Hire a staff member dedicated to technology	53	50	64	61	51	45
Provide technical assistance to staff in using technology	43	42	52	48	42	38
Upgrade technological capabilities of PCs	38	37	41	39	37	36
Replace student-use PCs w/ faster, more memory models	38	36	49	39	37	38
Replace administrative-use PCs w/ faster, more memory models	34	34	35	39	37	38
Purchase more PCs for administrative-use	19	19	22	23	15	16
Upgrade Internet connection	14	14	14	17	12	11

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

Second tier needs of Upward Bound projects include providing more technical assistance to staff in using technology (43%), replacing student-use PCs (38%), upgrading the technological capabilities of project PC's (38%) and replacing administrative-use PCs with faster models (34%). Fewer projects would spend additional funds to purchase additional PCs for administrative-use (19%) or to upgrade their Internet connections (14%).

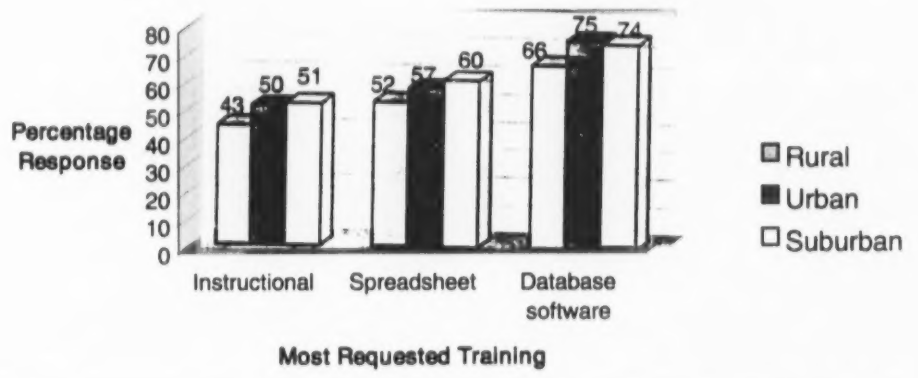
The data suggest different priorities depending upon project size and location. Larger projects are more interested than smaller projects in hiring a staff member dedicated to technology, in providing technical assistance to staff in using technology and in replacing student-use PCs with better models (Table 17). Smaller projects indicate greater interest in purchasing more desktop and laptop PCs for student use. Urban programs place a higher priority than either suburban or rural programs on purchasing more PCs for administrative-use, upgrading their Internet connections, hiring a staff member dedicated to technology and providing technical assistance to staff in using technology.

Training Required

Many projects are in need of the most basic types of computer training. One project in five needs to provide staff with basic computer literacy (21%) and word processing training (19%). Less critical needs identified include training in presentation software (6%), web site design (6%) and general Internet capabilities (3%). It is the rare project (7%) that does not have any training needs (See Table 18 on page 22).

A number of other critical areas emerge. The most critical needs are for training database software (70%), spreadsheet programs (55%), and proper record-keeping procedures (44%) (See Figure 6 on page 00). Almost half of projects indicate the need for staff instructional training (47%).

Figure 6: Bar Chart of UB Projects Most Requested Training by Location



Both large projects (those serving more than 100 students) and smaller projects (those serving 100 or fewer students) indicate a fairly strong desire for instructional training; however, the larger projects are more likely than the smaller ones to seek training in the use of spreadsheet (63% vs. 53%) and database (78% vs. 68%) software programs. The majority of urban (50%) and suburban programs (51%) say they desire instructional training, the largest percentages among any of the sub-groups in the survey.

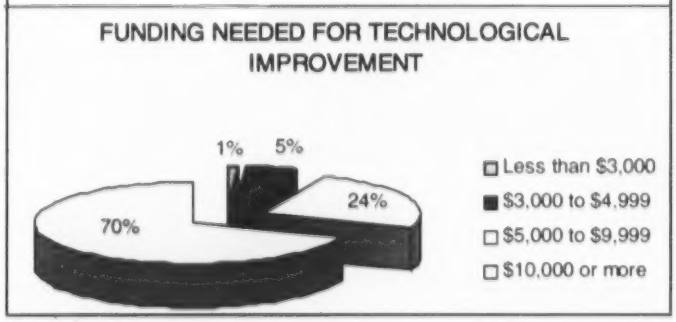
Table 18: Most Requested Staff Training Needs in All UB Programs (In Percent)

Training Requested	Total	100 or Less Students Served	More than 100 Students Served	Urban	Suburban	Rural
Databased Software	70%	68%	78%	75%	74%	66%
Spreadsheet Use	55	53	63	57	60	52
Instructional Training	47	47	47	50	51	43
Record Keeping	44	44	47	47	46	42
Basic computer Literacy	21	21	18	21	23	20

Source: National TRIO Clearinghouse Upward Bound Technology Survey, 2000

The costs for the overall improvements viewed as important are not inexpensive. Two-thirds of programs (66%) need $10,000 or more of increased annual funding in order to make the technological improvements required. Another 24 percent of Upward Bound programs need between $5,000 and $9,999 to make needed improvements.

Figure 7: Pie Chart of All UB Projects Technology Funds Needed



BEST COPY AVAILABLE

CONCLUSIONS AND RECOMMENDATIONS

When this study was originally conceptualized, the National TRIO Clearinghouse was interested in learning more about Upward Bound student, administrative, and instructional access and use of technology. We asked Upward Bound projects questions about their computer hardware, software, technology staffing, student and staff access to computers through the project, schools and community, integration of technology with instruction, and perceived needs for resources and staff training. Information from the Upward Bound Technology Survey suggests that Upward Bound students, projects and staff continue to have resource, access, and staff development needs. Projects identified how they could better serve students' technologically with resources of additional student laptop and desktop computers and software, staff training, and a dedicated technology staff person. The survey also suggests that projects need additional training and capacity building for integrating technology into the curriculum and using technology as an instructional tool. We conclude that project staff must provide models for using technology for learning that incorporates computers, multi-media, teleconferencing, on-line instruction, and distance and virtual learning.

Olsen (2000) recently reported in the *Chronicle of Higher Education* recently reported that 50 percent of current college freshmen own and are facile with computers. Many colleges require students to bring a computer to college and most college instructors now require students to use e-mail and other on-line learning and multi-media in their courses. Upward Bound projects must prepare students to be successful in this technologically infused environment. However, to accomplish this, Upward Bound Projects require considerable support and resources from policymakers, the U.S. Department of Education, the Council for Opportunity in Education, the National TRIO Clearinghouse, and regional and state TRIO associations. Projects also must make a commitment to rethink how they integrate technology into their projects.

The authors of this study have several recommendations for supporting Upward Bound Projects in their quest to lessen the digital divide.

TRIO Projects should re-examine the delivery of academic-year and summer services to integrate technology throughout the instructional program and in all student activities:

- Take steps to assure that each UB student has mastered core technology competencies as defined by the International Society for Technology in Education (ISTE) by high school graduation and incorporate these competencies into the curriculum
- Incorporate on-line learning in the curriculum
- Examine the extent to which on-line learning can expand course offerings and improve collaborative learning opportunities among students
- Re-examine the delivery of academic year services to assure that all students have access to computers and the Internet on a daily basis to complete academic assignments
- Collaborate with schools to improve student access and to incorporate technology into the curriculum

The U.S. Department of Education should support TRIO projects through resources and training opportunities that will assure operationalization of technology goals, including improved use of existing equipment:

- Work towards a goal of assuring that each Upward Bound project builds the capacity to eliminate inequities in technology access
- Continue its technology initiative implemented in 2000 to improve the technology infrastructure of Upward Bound projects and commit to a continuous resourcing structure
- Investigate the feasibility of establishing five to ten regional Upward Bound Math/Science Centers that would provide cutting-edge technology instruction to participants, disseminating their best practices to Upward Bound staff through professional development and technical assistance

- Provide administrative oversight to assure that all Upward Bound students have appropriate access to technology during the summer and academic-year program and that the use of technology is incorporated across the program's academic offerings
- Encourage and support collaborative opportunities for Upward Bound projects to work with other projects or outside academic entities to use technology to provide course offerings and academic services

The National TRIO Clearinghouse should support technological efforts of Upward Bound Projects by disseminating research and best practices and continuing its program of research in the area of technology access and use:

- Publish regular reports through a variety of media and instruction that highlight best practices in incorporating technology into Upward Bound instruction and services
- Undertake an in-depth examination of professional development needs in the areas of technology

The Council for Opportunity in Education and regional and state TRIO associations must actively invest association resources in eliminating disparities in knowledge with respect to technology for all members:

- Provide hands-on technology workshops and other related professional development opportunities at all state, regional, and national meetings
- Encourage and help Upward Bound projects to build the capacity for collaboration in the delivery of student services and instruction through technology
- Begin to build the capacity to deliver professional development opportunities to members through distance learning

American corporations should establish partnerships with local Upward Bound projects to acquaint both students and staff with ways in which technology is transforming businesses and the technological capabilities required ofemployees.

Congress must provide the resources and legislative oversight to assure that Upward Bound projects have the capacity to take appropriate steps in eliminating disparities in access and incorporation of technology for all participants.

Working together, we can accomplish considerable progress in improving the technology use and access of Upward Bound projects and students.

Notes

[1] In this report/survey, we have generally defined technology as computer-based. However, in the area of instruction, we expanded the definition to include multi-media and distance communication technologies such as video conferencing.

[2] In this report/survey, we have generally defined technology as computer-based. However, in the area of instruction, we expanded the definition to include multi-media and distance communication technologies such as video conferencing.

[3] U.S. Department of Education Website, www.ed.gov/offices/OPE/HEP/trio/upbound.html#ret2.

[4] 20 U.S.C. 1070a – 13.

[5] www.ed.gov/offices/OPE/HEP/trio/upbound.html

[6] U.S. Department of Commerce, Washington, DC. (July 2000)

[7] Included in the Appendix.

[8] The Short-Term Impact of Upward Bound: An Interim Report, Washington, DC: Mathematica Policy research, Inc. May 1997.

[9] U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993-94, unpublished data. (August 1997.)
www.nces.ed.gov/pubs2000/Digest99/d99t421.html [August 25, 2000]

[10] U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Internet Access in U.S. Public Elementary and Secondary Schools; Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, 1995; and unpublished data. (March 1999.)
www.nces.ed.gov/pubs2000/Digest99/d99t425.html [August 25, 2000]

[10] Ibid.

[11] Ibid.

[12] Computer technology service providers have determined that 300 MHz speed is a standard for adequate computer technology performance (CBMI, Fairfax, VA).

REFERENCES

Bamyeh, M. (2000). *The ends of globalization* . Minnesota: University of Minnesota Press.

Bass, R., & Rosenzweig, R. (2000). *Rewiring the History and Social Studies Classroom: Needs, Frameworks, Dangers, and Proposals.* www.air.org/forum/abBass.htm

Corporate Watch's Globalization and Corporate Rule index (2000). www.corpwatch.org/trac/globalization/ October 12, 2000.

Council for Opportunity in Education (1999). *The National TRIO Clearinghouse Upward Bound Technology Survey.* Washington, DC: National TRIO Clearinghouse.

EdWeek (2000). http://www.edweek.org/sreports/tc99/articles/up-intro.htm.

Friedman, T. (2000). *The lexus and the olive tree.* New York: Anchor Books.

Institute on Globalization and the Human Condition (2000). www.humanities.mcmaster.ca/~global/global.htm. October 12, 2000.

Olsen, F. (2000). The wireless revolution. In *The Chronicle of Higher Education,* V. 47, N. 7., p. A60.

Power, R., and Farrow, R. (2000). *Tangled Web: Tales of Digital Crime from the Shadows of Cyberspace.* San Francisco, CA: Pearson Publishing.

President Clinton, (January 27, 2000). *State of the Union Address.* July, 2000: www.whitehouse.gov/WH/New/digitaldivide/digital5.html

Rakow, S. (2000). *Forum on Technology in K-12 Education: Envisioning a New Future—Science.* www.air.org/forum/abRakow.htm

Riley, R. (2000). Remarks. Atlanta, Georgia: National Educational Computing Conference www.ed.gov/Speeches/06-2000/000627a.html

Schank, R. (2000). *Extracurriculars as the Curriculum: A Vision of Education for the 21st Century.* www.air.org/forum/Schank.pdf.

Schneier, B. (2000). *Secrets and Lies: Digital security in a networked world.* Canada: Wiley & Sons.

The International Forum on Globalization (IFG), (2000). www.ifg.org/ October 12, 2000.

The Children's Partnership, (March 2000). *Online content for low-income and under-served Americans.* www.childrenspartnership.org.

Thornburg, D. (2000). *Technology in K-12 Education: Envisioning a New Future.* www.air.org/forum/abthornburg.htm

University of Colorado at Boulder, (2000). Globalization and Democracy: NSF Graduate Training Program www.colorado.edu/IBS/GAD/gad.html October 12, 2000.

U.S. Department of Commerce (July 1999). *Falling through the net.* Washington, DC: National Telecommunications and Information Administration. www.ntia.doc.gov/ntiahome/digitaldivide/factsheets/income.htm

U.S. Department of Commerce (July 2000). *Falling through the net.* Washington, DC: National Telecommunications and Information Administration. www.ntia.doc.gov/ntiahome/digitaldivide/factsheets/racial-divide.htm

U.S. Department of Education, (2000). www.ed.gov/offices/OVAE/CTC/ctcqa.html#question9).

APPENDIX A

The National TRIO Clearinghouse
Upward BoundTechnology
SURVEY

Thank you for agreeing to complete this important survey. Please use a dark pencil to fill out the survey so you can erase any stray marks or mistakes. Please fax your completed survey questionnaire to Nicole Norfles, National TRIO Clearinghouse, at 202-347-0786 by no later than Friday, November 12, 1999. If you have questions about the survey, please call Andrea Reeve, Director, or Nicole Norfles, Coordinator of Technology Survey Research:

National TRIO Clearinghouse
Council for Opportunity in Education
1025 Vermont Avenue, NW, Suite 900
Washington, DC 20005
Phone:202-347-7430

The survey results will be reported only in the aggregate in order to maintain the anonymity of all survey respondents, and all information contained herein will be held in the strictest of confidence.

PROJECT INFORMATION

Name:_____
Title: _____
Project: _____
Address:_____
_____
Phone: (_____) _____-_____
Fax: (_____) _____-_____
E-Mail\Address:_____

Project Website & URL

_____

Clearly mark the box (or circle the response) that corresponds to your answer for <u>each</u> of the following questions.

Please identify the type of TRIO program your project represents.

- ❒ 1 Upward Bound
- ❒ 2 Upward Bound Math Science
- ❒ 3 Veteran's Upward Bound
- ❒ 4 Other (please specify)

_____

What is the name of the institution or organization that your TRIO program is affiliated with?

- ❒ 1 Specify

_____

2a. What is the total number of students served by your program?

- ❒ 1 Less than 50 students
- ❒ 2 50 to 100 students
- ❒ 3 101 to 150 students
- ❒ 4 151 to 200 students
- ❒ 5 201 to 250 students
- ❒ 6 251 to 300 students
- ❒ 7 Over 300 students
- ❒ 9 Don't know

3. Do the students in your program have access to the Internet <u>through your project</u>?

- ❒ 1 Yes
- ❒ 2 No
- ❒ 9 Don't know

4. Do the students in your program have access to e-mail <u>through your project</u>?

- ❒ 1 Yes
- ❒ 2 No
- ❒ 9 Don't know

5. How is your program's Internet connection provided? Is it through the educational institution you are affiliated with, a private arrangement set up by your project, or is your program's Internet connection provided through some other means?

- ❒ 1 Through educational institution
- ❒ 2 Privately arranged through project
- ❒ 3 Provided through some other means
- ❒ 9 Don't know

6. Who on your project's staff is dedicated to overseeing your use of technology (i.e. hardware, software, and internet) for <u>academic</u> purposes?

- ❒ 1 No one is currently dedicated
  Go to Q.8
- ❒ 2 Name and Title_____

7. What percentage of that person's full-time position is spent on overseeing your use of technology for <u>academic</u> purposes?

- ❒ 1 Less than 10 percent
- ❒ 2 10-25 percent
- ❒ 3 26-50 percent
- ❒ 4 51-75 percent
- ❒ 5 76-100 percent
- ❒ 9 Don't know

8. Who on your project's staff dedicated to overseeing your use of technology (i.e. hardware, software, and internet) for <u>administrative</u> purposes?

- ❒ 1 No one is currently dedicated
  Go To Q.10
- ❒ 2 Name and Title

_____

9. What percentage of that person's full-time position is spent on overseeing your use of technology for <u>administrative</u> purposes?

- ❒ 1 Less than 10 percent
- ❒ 2 10-25 percent
- ❒ 3 26-50 percent
- ❒ 4 51-75 percent
- ❒ 5 76-100 percent
- ❒ 9 Don't know

10. Which of the following best describes the type of connection <u>most</u> of your project's PC's have to the Internet?

- ❒ 1 14.4 bps modem connection
- ❒ 2 28.8 bps modem connection
- ❒ 3 56K modem connection
- ❒ 4 T1 connection
- ❒ 5 Cable television line connection
- ❒ 6 ISDN connection
- ❒ 8 Other (please specify)

_____

- ❒ 9 Don't know

11. Are the majority of <u>desktop personal computers</u> used by your project IBM-compatible or are the majority Macintosh computers?

- ❒ 1 IBM-compatible

❒ 2 Macintosh
❒ 9 Don't know

12. Do project staff, students, or both have access to the information technology office at the institution you are affiliated with?

❒ 1 Institution does not have information technology office
❒ 2 Project staff only
❒ 3 Students only
❒ 4 Both project staff and students
❒ 5 Neither project staff nor students
❒ 9 Don't know

13. Are computers and the use of technology integrated into your project's course content for students?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

14. How often would you say your project uses technology for instructional purposes—all of the time, most of the time, only some of the time, rarely or never?

❒ 1 All of the time
❒ 2 Most of the time
❒ 3 Some of the time
❒ 4 Rarely
❒ 5 Never
❒ 9 Don't know

15. Does your project offer students specific courses on computing and using emerging technologies?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

16. Do students in your project use your project's computers to aid them in their search for information about prospective colleges?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

17. Have students in your project used your project's computers to take virtual tours of prospective colleges they are interested in learning more about?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

18. Have students in your project used your project's computers to fill out and/or submit their college applications online?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

19. Have students in your project used your project's computers to fill out and/or submit their college financial aid applications online?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

20. For each of the following, please indicate whether your project ever uses this technology tool for instructional purposes.

A. Down-linking of satellite program sites to main program site?
❒ 1 Yes
❒ 2 No
❒ 9 Don't know

B. The Internet?
❒ 1 Yes
❒ 2 No
❒ 9 Don't know

C. Videoconferencing?
❒ 1 Yes
❒ 2 No
❒ 9 Don't know

D. E-mail?
❒ 1 Yes
❒ 2 No
❒ 9 Don't know

E. Virtual courses?
❒ 1 Yes
❒ 2 No
❒ 9 Don't know

F. Course conferencing?
❒ 1 Yes
❒ 2 No
❒ 9 Don't know

21. For each of the following, please indicate whether your project ever uses this type of coputer software for instructional purposes.

A. Word processing software?
❒ 1 Yes
❒ 2 No
❒ 9 Don't know

B. Spreadsheet programs?
❒ 1 Yes
❒ 2 No
❒ 9 Don't know

C. Desktop Publishing software?
❒ 1 Yes
❒ 2 No
❒ 9 Don't know

D. Database Software?
- ❒ 1 Yes
- ❒ 2 No
- ❒ 9 Don't know

E. Presentation software (like Microsoft PowerPoint)?
- ❒ 1 Yes
- ❒ 2 No
- ❒ 9 Don't know

F. Web page creation software?
- ❒ 1 Yes
- ❒ 2 No
- ❒ 9 Don't know

22. Do you require students to give presentations using technology, or not?
- ❒ 1 Yes
- ❒ 2 No
- ❒ 9 Don't know

23. Do you require students to use multimedia, or not?
- ❒ 1 Yes
- ❒ 2 No
- ❒ 9 Don't know

24. Does your project have access to laptop computers that students can borrow and use on their own?
- ❒ 1 Yes
- ❒ 2 No
- ❒ 9 Don't know

25. How many laptop computers that students can borrow and use on their own does your project have?
- ❒ 1 None
- ❒ 2 1-3
- ❒ 3 4-7
- ❒ 4 8-10
- ❒ 5 11-15
- ❒ 6 16-20
- ❒ 7 More than 20
- ❒ 9 Don't know

26. How many desktop personal computers does your project have primarily for student academic use?
- ❒ 1 None
- ❒ 2 1-3
- ❒ 3 4-7
- ❒ 4 8-10
- ❒ 5 11-15
- ❒ 6 16-20
- ❒ 7 More than 20
- ❒ 9 Don't know

27. What is the approximate ratio of students in your project to the number of student-use computers? Is the approximate ratio:
- ❒ 1 We have 0 student-use computers
- ❒ 2 1:1
- ❒ 3 3:1
- ❒ 4 5:1
- ❒ 5 10:1
- ❒ 6 15:1
- ❒ 7 20:1
- ❒ 8 More than 20:1
- ❒ 9 Don't know

28. How many of your project's desktop personal computers designated primarily for student academic use have a microcoprocessor with a mega hertz speed of more than 300mhz?
- ❒ 1 None
- ❒ 2 All
- ❒ 3 1-3
- ❒ 4 4-7
- ❒ 5 8-10
- ❒ 6 11-15
- ❒ 7 16-20
- ❒ 8 More than 20
- ❒ 9 Don't know

29. How many of your project's desktop personal computers designated primarily for student academic use have a micro-coprocessor with a megahertz speed of between 100mhz and 300mhz?
- ❒ 1 None
- ❒ 2 All
- ❒ 3 1-3
- ❒ 4 4-7
- ❒ 5 8-10
- ❒ 6 11-15
- ❒ 7 16-20
- ❒ 8 More than 20
- ❒ 9 Don't know

30. How many of your project's desktop personal computers designated primarily for student academic use have a micro-coprocessor with a megahertz speed of less than 100mhz (including all 486's, 386's, 286's, and older models)?
- ❒ 1 None
- ❒ 2 All
- ❒ 3 1-3
- ❒ 4 4-7
- ❒ 5 8-10
- ❒ 6 11-15
- ❒ 7 16-20
- ❒ 8 More than 20
- ❒ 9 Don't know

31. How many desktop personal computers does your project have primarily for administrative use?
- ❒ 1 None
- ❒ 2 1-3
- ❒ 3 4-7
- ❒ 4 8-10

❒ 5 11-15
❒ 6 16-20
❒ 7 More than 20
❒ 9 Don't know

32. How many of your project's desktop personal computers designated primarily for administrative use have a micro-coprocessor with a megahertz speed of more than 300mhz?

❒ 1 None
❒ 2 All
❒ 3 1-3
❒ 4 4-7
❒ 5 8-10
❒ 6 11-15
❒ 7 16-20
❒ 8 More than 20
❒ 9 Don't know

33. How many of your project's desktop personal computers designated primarily for administrative use have a micro-coprocessor with a megahertz speed of between 100mhz and 300mhz?

❒ 1 None
❒ 2 All
❒ 3 1-3
❒ 4 4-7
❒ 5 8-10
❒ 6 11-15
❒ 7 16-20
❒ 8 More than 20
❒ 9 Don't know

34. How many of your project's desktop personal computers designated primarily for administrative use have a micro-coprocessor with a megahertz speed of less than 100mhz (including all 486's, 386's, 286's, and older models)?

❒ 1 None
❒ 2 All
❒ 3 1-3
❒ 4 4-7
❒ 5 8-10
❒ 6 11-15
❒ 7 16-20
❒ 8 More than 20
❒ 9 Don't know

35. Do you use your administrative computers for financial accounting purposes, or not?

❒ 1 Yes
Go To Q.36
❒ 2 No
Go To Q.37
❒ 9 Don't know
Go To Q.37

36. **[IF YES TO Q.35]** Do you use a financial accounting software program provided by the academic institution your project is affiliated with, or is your financial accounting software not provided by the academic institution your project is affiliated with?

❒ 1 Provided by academic institution
❒ 2 Not provided by academic institution
❒ 3 Do not have financial accounting software (vol.)
❒ 9 Don't know

37. Do you use your administrative computers to keep a database of students in your project, or not?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

38. Do you use e-mail for administrative purposes, or not?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

39. Do you use the Internet for administrative purposes, or not?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

40. In general, do most of your students have access to computers and technology at their schools, or not?

❒ 1 Yes
Go To Q.41
❒ 2 No
Go To Q.42
❒ 9 Don't know
Go To Q.42

41. **[IF YES TO Q.40]** Do most of your students have access to computers and technology in their classrooms, or are the computers available in a central location at their schools, such as the library?

❒ 1 Classrooms
❒ 2 Central location
❒ 9 Don't know

42. In general, do most of your students have access to computers and technology in their communities (churches, Boys or Girls Club, the Y, public libraries, etc.), or not?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

43. In general, do most of your students have access to computers and technology in their homes, or not?

❒ 1 Yes
❒ 2 No
❒ 9 Don't know

44. Which of the following types of training, if any, does your administrative and instructional staff need? **[Check all that apply]**

- ❒ 1 None
- ❒ 2 Instructional training
- ❒ 3 Training in proper record keeping procedures
- ❒ 4 Basic computer literacy training
- ❒ 5 Word processing training
- ❒ 6 Training to use Spreadsheet software programs
- ❒ 7 Training to use data based software programs
- ❒ 8 Other (please specify)

_____

_____

_____

- ❒ 9 Don't know

45. If additional funds were made available to your project, what would you do to upgrade your technological capabilities? **[Check all that apply]**

- ❒ 1 Purchase more PC's for student-use
- ❒ 2 Purchase more PC's for administrative-use
- ❒ 3 Purchase more instructional software
- ❒ 4 Purchase more laptop computers for student-use
- ❒ 5 Upgrade my Internet connection
- ❒ 6 Hire a staff member dedicated to technology
- ❒ 7 Provide more training for staff in use of technology
- ❒ 8 Upgrade the technological capabilities of our PC's
- ❒ 9 Use funds to provide technical assistance to staff in using technology
- ❒ 10 Replace student-use PC's with faster models with more memory
- ❒ 11 Replace administrative PC's with faster models with more memory
- ❒ 88 Other (please specify)

_____

_____

- ❒ 99 Don't know

46. Approximately how much increased annual funding would you need to make the technological improvements you just indicated you would like to make?

- ❒ 1 Less than $1,000
- ❒ 2 $1,000-$1,999
- ❒ 3 $2,000-$2,999
- ❒ 4 $3,000-$3,999
- ❒ 5 $4,000-$4,999
- ❒ 7 $6,000-$6,999
- ❒ 8 $7,000-$7,999
- ❒ 9 $8,000-$8,999
- ❒ 11 $10,000 or more
- ❒ 99 Don't know

47. Which of the following Council for Opportunity in Education constituent organizations do you belong to:

- ❒ 1 Association for Equality and Excellence in Education
- ❒ 2 Association of Special Programs in Region Eight
- ❒ 3 Caribbean Association of TRIO Programs
- ❒ 4 Mid-America Association of Educ.Opportunity Program Personnel
- ❒ 5 Mideastern Association of Educ. Opportunity Program Personnel
- ❒ 6 New England Educational Opportunity Association
- ❒ 7 Northwest Association of Special Programs
- ❒ 8 Southeastern Association of Educ. Opportunity Program Personnel
- ❒ 9 Southwest Association of Student Assistance Programs
- ❒ 10 Western Association of Educational Opportunity Personnel
- ❒ 11 None of the above

48. Is the <u>main site</u> of your project located in an urban area, a suburban area, or a rural area?

- ❒ 1 Urban
- ❒ 2 Suburban
- ❒ 3 Rural
- ❒ 9 Don't know

49. Is the academic institution your project is affiliated with a <u>two-year or four-year</u> higher education institution?

- ❒ 1 Not affiliated with an academic institution
- ❒ 2 Two-year institution
- ❒ 3 Four-year institution
- ❒ 9 Don't know

50. Is the academic institution your project is affiliated with a <u>public or private</u> higher education institution?

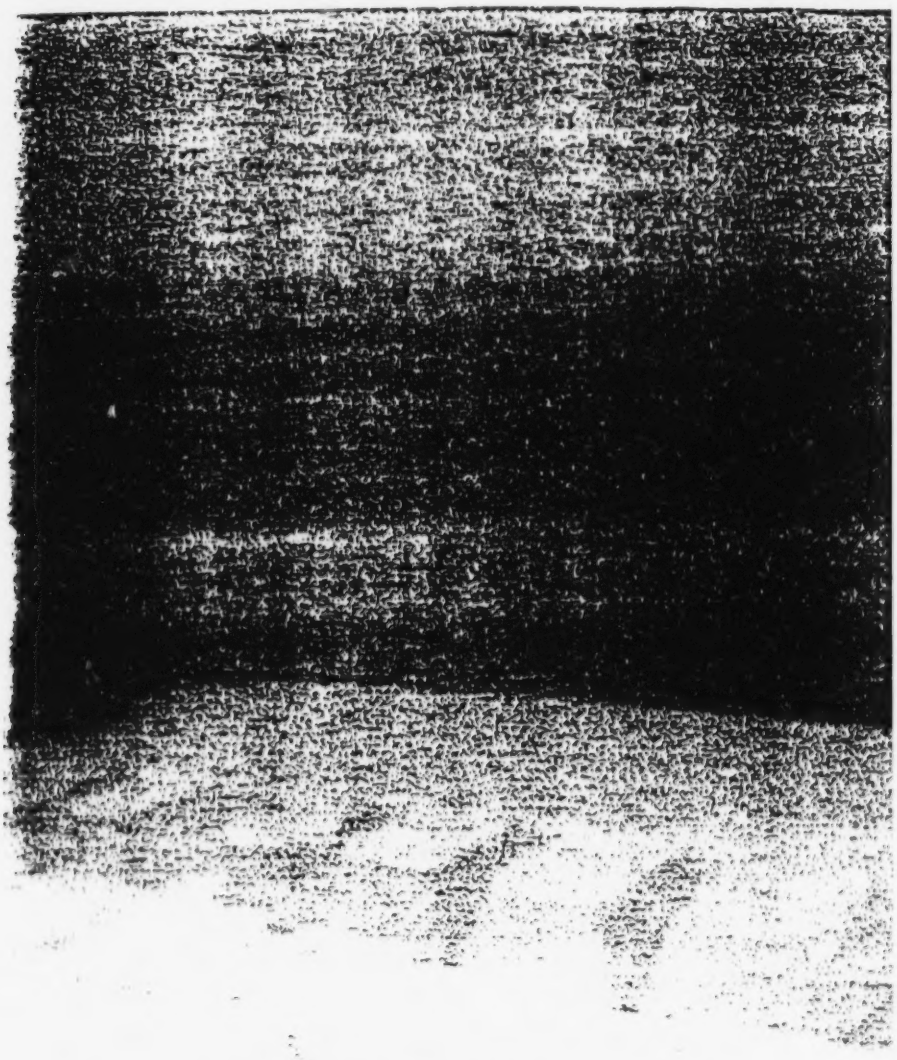
- ❒ 1 Not affiliated with an academic institution
- ❒ 2 Public institution
- ❒ 3 Private institution
- ❒ 9 Don't know

Thank you very much for completing this survey! When the survey results are tabulated we will share the findings with you.

ABOUT THE AUTHOR

NICOLE NORFLES currently works as Fellow at The Center for the Study of Opportunity in Higher Education. Her work focuses on issues relevant to postsecondary educational policy, finance, and student access. Her responsibilities also include coordinating the Technology Surveys for the National TRIO Clearinghouse for each of the TRIO programs, conducting research and policy analysis of McNair scholars financial aid needs, conducting salary surveys of TRIO professionals, and taking a lead on special assignments including the Gates Millennium Scholarship Program and a variety of international initiatives.

Nicole has also worked at the George Washington University (GWU) Graduate School of Education & Human Development (GSEHD) as Program Coordinator of the New Practitioners Program (NPP) and as Program Director and Finance Manager within the Bilingual Special Education Program. She also served as a GRPA analyst at the U.S. Department of Labor in the OSHA Reinvention Office.



National TRIO Clearinghouse
1025 Vermont Avenue, NW, Suite 900
Washington, DC 20005

www.trioprograms.org/clearinghouse

BEST COPY AVAILABLE